SIRIUS FEDERAL TERRITORY

Sirius Educational Center

Sirius University of Science and Technology

22 31 DECADE OF SCIENCE AND TECHNOLOGY

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YOUNG SCIENTISTS HACKATHON 2025

Background

The Sirius University is rapidly expanding, attracting talented students, scientists, tutors, and researchers with diverse competencies and scientific interests.

However, this growth creates organizational challenges: it is difficult to quickly assess individual researchers' achievements, form effective teams, and foster collaborative research. To manage talent effectively and promote interdisciplinary development, we need a unified platform that brings together the entire University community and enables objective measurement of each specialist's scientific productivity and impact.

About the Case

Academic Profile: A Scientist's Digital Footprint

Goal:

To create an intelligent service for the automated collection, systematization, and visualization of publication activity across the University's academic community.

Core Functional Requirements

1. Automated Data Collection of publication data for University staff, students, and postgraduate scholars from major bibliographic databases and digital archives, including: Google Scholar, Scopus, Web of Science, RSCI, MathSciNet, PubMed, arXiv.org, Crossref.

To be used: page parsing and open APIs.

2. Analysis of Individual Key Metrics for publication authors, including citation impact, h-index, affiliation, authorship contribution.

3. Enable Manual Editing of author profiles via .xls/.csv file import. When using Django: configure profile management through Django Admin (via local administrator).

4*. Knowledge Graph & Community Detection – build a knowledge graph and identify research communities by research areas, disciplines and staff.

5*. Collaboration Recommendations. Generate recommendations for potential research collaborations within the University.

Plan

Checkpoint 1:
Author Profile Generation

Develop a REST API
for an author profile

Expected Outcome:
- ★ REST API with Swagger documentation for CRUD operations.
- ★ Description of methods and data models with sample test data.
- ★ Interface mock-ups and main screen designs.
- ★ Selected ML model and developed data processing method.

Checkpoint 2:
Graphical User Interface

Develop an interface to collect, analyze, and visualize key author metrics for a research group

Expected Outcome:
- ★ Automated monthly data collection, processing, and storage.
- ★ A trained ML model using the initial dataset.
- ★ A configured API to provide processed data for visualization.
- ★ An initial publications dataset from the research group.

Checkpoint 3:
Related Components Development

Create a functional UI integrated with the backend

Expected Outcome:
- ★ A working solution with core features and a refined user interface.
- ★ Detailed scientist profiles with publications, citations, and productivity metrics.
- ★ A proposed recommendation system for forming interdisciplinary teams.
- ★ Project documentation launched using Docker.